

# STOREFRONT

ART AND ARCHITECTURE

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**You Are Here: Information Drift**  
A Site Specific Information Installation  
by  
**Laura Kurgan**

**Exhibition Schedule: 12 March to 16 April 1994**

Gallery Hours: Tuesday - Saturday, 11AM-6PM

Opening Reception: March 12, 6-8PM

How are the invisible networks of the computer age transforming and redefining the spaces in which we have grown accustomed to living? Laura Kurgan's You Are Here: Information Drift is a computer-based multimedia installation that seeks to explore and question the relations between digital and built spaces, and to investigate the strange play of orientation and disorientation in that interaction.

Using new technologies for satellite-based real-time mapping, the military's Global Positioning System (GPS), and for windscreen data display, Head Up Display (HUD), the installation aims to locate, mark, and map the position of a place, in this case StoreFront, and then to test the interactions between those digital maps and the built space they seek to locate.

"Architects have been using computers for some time now," says Kurgan, "but there hasn't been much thought given to the way these digital technologies are transforming our experience of space. Digital space extends far beyond 3D

renderings, virtual reality, and the Internet. Cyberspace has its own architecture, an architecture of information, and it's producing a complicated sense of disorientation. I wanted to experiment with what it would mean to say 'you are here' in cyberspace, by using the most powerful mapping and navigation technologies that we know of."

Laura Kurgan uses StoreFront as both the subject of, and the space in which to register and display, the process of digital mapping with GPS. Using a portable GPS receiver, she has located and marked five points and a line on the building with the Satellite network, providing position records of StoreFront's latitude, longitude, and elevation, accurate to within five meters. The digital information has then been manipulated with mapping software to produce a series of digital drawings of StoreFront's location, what Kurgan calls "drawing with satellites." The maps detail the process of drawing with GPS, and provide the exact records of Kurgan's correspondence with the satellites. The composite final map is hung in the gallery along the line that physically links and digitally averages the points located with the GPS network, a line that runs parallel to and 'digitizes' the building's new facade by Steven Holl and Vito Acconci.

"Holl and Acconci have opened up the storefront of StoreFront to a new traffic between public and private," says Kurgan, "but my aim is show that these barriers have long since been eroded and transformed by digital networks. StoreFront is a node, defined only by its differing positions in different networks, so that we are never simply inside or outside the space."

"You Are Here: Information Drift" introduces cyberspace into the built space of StoreFront by installing a 24-hour real-time feed, from a satellite receiver located on the roof of the building, of GPS position readings for the building and displaying the continuous readout against a digital map of the site's New York location. The installation also registers these information effects in the physical space of the building, using both 'full scale' markers which show the precise location of the spaces mapped and the HUD unit which overlays a computer animation of the GPS satellite network in motion onto the composite map of the information they have provided. The interface between digital and built space is thus explored at once as a question of 'overlay,' with the HUD's digital imagery



superimposed on the GPS map, and as one of 'scale,' with the computer-derived map of the site built into the site itself as the series of markers.

Kurgan says that "the installation is about the impossibility of not wanting to orient yourself, about the need to ask 'where am I?,' and about the impossibility of ever finally answering that question. Even when the satellites are saying 'you are here,' at five meters or one centimeter, cyberspace is an experience of drift, of the drift in the GPS signals and our wandering in its information zones."

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She sees promise and danger in the technologies she has employed. "GPS promises that we'll never get lost again, and who could fail to respond to such a dream? But I wonder about the cost of this precision. What happens when the earth is carpeted with a one-centimeter grid, when 'target acquisition' can be done anywhere and in real-time? And who would, finally, want to lose the experience of getting lost? Would any discovery be possible without it?"

"You Are Here: Information Drift" is on display at StoreFront for Art and Architecture from Saturday, 12 March through Saturday, 16 April 1994, and the gallery is open Tuesday through Saturday, between 11AM and 6PM.

Born 1960, in Cape Town, South Africa, Laura Kurgan moved to U.S. in 1979. Graduated with B. A. in Architecture at the University of California, Berkeley (1984), an M. Arch. from Columbia University (1988), she has since worked in various architectural offices in New York City. Her most recent project was "Interface: information overlay," which was exhibited as part of "Trade Routes" at New Museum of Contemporary Art in New York City in 1993. She has also designed installations for interactive cinema projects by Grahame Weinbren, exhibited in Berlin, San Francisco, Boston, and London. She has written on the role of satellite mapping and surveillance technology during the war over Kuwait, in Documents 1/2 (1992), and her "On Screen Display" will be published

in StoreFront's Reports this year. "You Are Here," a research project on mapping in architecture and urbanism, has been supported by a grant from the Graham Foundation for advanced Studies in the Fine Arts, and this installation at StoreFront will be her first solo exhibition.

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**Interface: Head Up, Head Down**

Laura Kurgan

November 1992

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## Interface: Head Up, Head Down

Laura Kurgan

.... an installation using a spun-off military technology called "head-up display" as a device for locating or orienting the visitor in the space of the museum ... but not just the space of the museum, and not simply the orientation that aims to stabilize or comfort the human body. The aim is to create and explore an intermediate quasi-space, a crossing point, between two dominant interpretations of space -- those of the body (physical, or perspectival) and of information (data flows, or networks) -- and thus to provoke the disorientation on which discovery depends.

In front of a waist-high or head-down information strip and the head-up display projection, the visitor will be asked to shift his or her position within two everyday spaces: the immediate perspectival or experiential space of the body in the installation, and the flow of information which can or does move in and out of the museum. In this shifting zone, two systems of representing space -- of spacing -- are described and forced to encounter one another. Rather than positioning the viewer in some secure space, the crossing point should provoke an interference between the perspectival (sometimes mislabeled "real") space within which our bodies are accustomed to moving and sensing, and the space of information, the flows through data networks and the cuts that render them accessible, if still so difficult to discern with the senses. Is this crossing a space, or simply the movement traced in the blinking of an eye?

The installation is composed of three elements: a portion of the wall of the museum, a transparent glass pane and the head-up display (HUD) projection unit, and an LED information strip mounted on a rail in front of the pane. The HUD unit is connected to a remote computer elsewhere in the museum, which is in turn linked to a number of remote data channels. The installation cannot be understood as an object, but only as an interface -- an uneven quasi-space between two "experiences" of space.

What happens when these two spaces, these two experiences or representations of space, cross? The encounter occurs daily, in the ordinary cyborg world where

so many of the reassuring boundaries (between museum and society, public and private, human and machine, inside and outside) seem to lie in ruins, but perhaps nowhere with more intensity than in the cockpits of military aircraft. Fearful of pilots becoming captives of their video display monitors and thus losing sight of the space outside the cockpit, aircraft designers invented a system for projecting flight data onto the windscreen directly in front of the pilot, optically focused at infinity to obviate the need constantly to refocus the eye from data to world. The pilot, always in danger of losing track of his or her location (flying at twice the speed of sound and against gravity-forces that threaten to render him or her unconscious), requires a steady stream of information simply to remain oriented. A g-suit keeps the pilot conscious, and the HUD keep the "eyes out." Data of all sorts (speed, attitude and altitude, heading, etc.) and any image from the head-down video displays (radar, maps, etc.) can be projected onto the HUD, across roughly 20° of the pilot's field of view and visible even in bright daylight. (The photographs attached show a typical cockpit interior with HUD, and a view through the HUD.) The head-up display screen functions as a supplement to the body, a prosthetic device both for vision and for access to information. The pilot "sees" not only through but with the screen, and thus transforms the concept of depth of field, since the information projected in front of his or her face is thrown onto the same plane of focus as the exterior objects (at infinity). The HUD introduces not so much a new space as the interface between two spaces, not an object and not a flow but their unstable encounter in the event of a crossing ... call it the blink that signals the most unsettling disorientation.

The office worker, plugged into telephone headset, dictaphone footpedal, computer keyboard, and perhaps walkman earphones, is only the most evident if least obvious figure of our everyday cyborg state. Interface aims to slow things down, to quiet the pace at which bodies and information crisscross, and open up something of the strangeness or foreignness of their encounter. From HUD in cars to touch-screen bank machines to museum interactives, contemporary techno-culture is an experience of the drive to produce this crossing, to provoke a certain interactivity ... but perhaps too often without thinking enough about just where and when this engagement occurs. How do our bodies cut into the flow of information, and what happens at the interface? Taking, or rather, giving the time and space to think about this, Interface offers an experiment in spacing, on a new and entirely unstable border between two oddly incompatible, or more



rigorously, two asymmetrical representations of spaces: neither here nor there, body or data. I stand, a bit uneasily, before a sheet of glass looking through it at a black circle on a white wall, and words and images, a stream of data, appear directly before my eyes yet focused on the circle. I look down to learn what has happened. I look up to connect myself to an elsewhere. Where am I, and what am I looking at? Perhaps, in this dislocation, there is finally a chance to think, no longer to take for granted that I am somewhere that I can rely on.



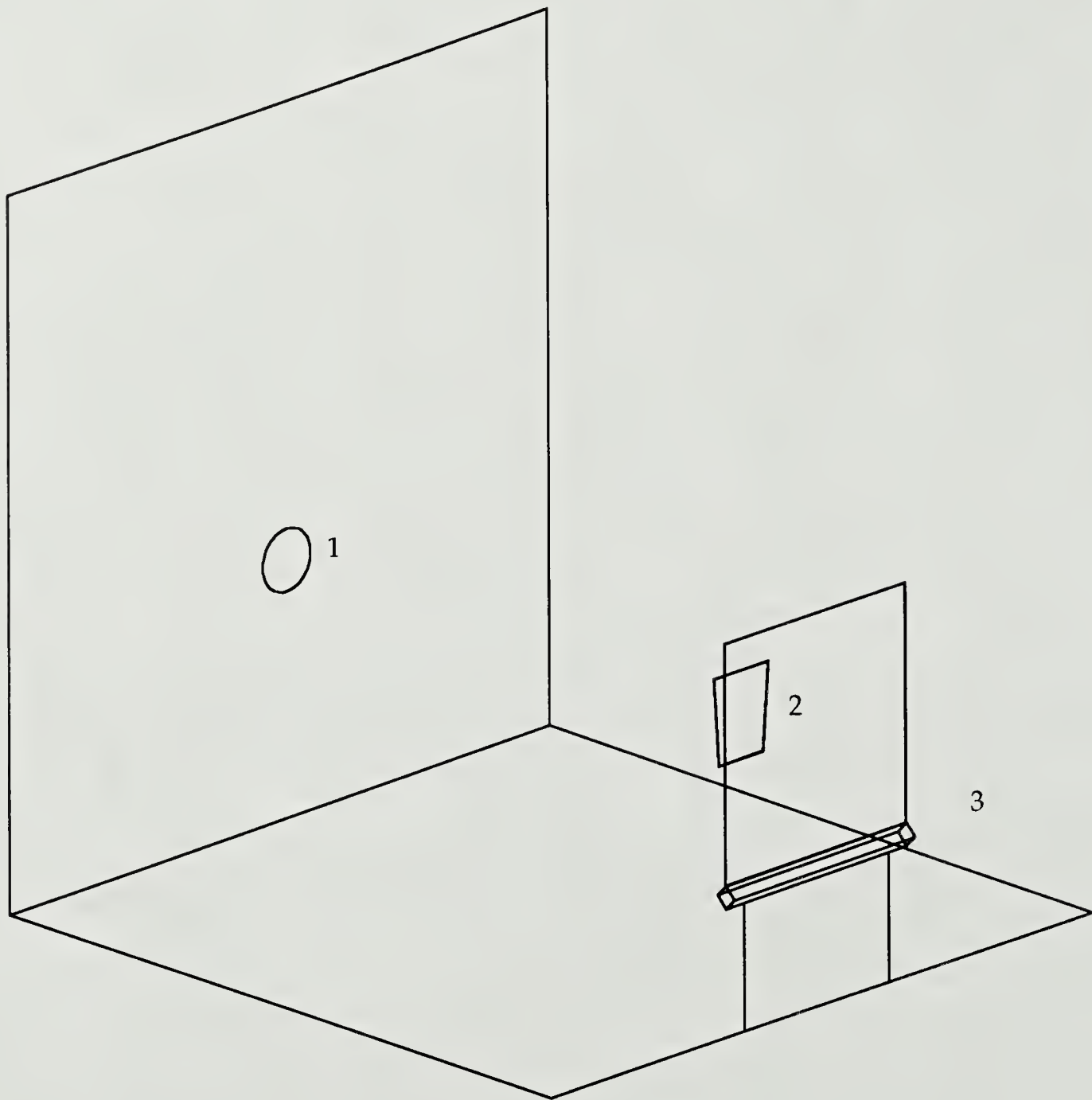
The axonometric drawing attached describes the installation. The three elements -- wall, glass and HUD, and LED threshold -- interplay as follows:

(1) a point of focus silkscreened onto the wall, a simple circle providing a reference or orientation point for the viewer at a distance (at least ten feet).

(2) a small head-up display unit mounted beneath a transparent glass pane (roughly 3' x 5'), projecting data (text, alphanumeric symbols, video) onto the screen. The HUD unit will be linked to and display (a) information networks entering from outside the museum, for instance news services (AP, Reuters), a stock market ticker, Compuserve or Prodigy, the Newsday Times Square headline service, time, weather, and so on (the potential is there to hook into any information service); (b) maps of this and other flows of information accessed by the museum, for instance, telephone, microwave, fax or hard-wired data links, sewer, water, electricity, radio and television, and so on. The HUD unit renders the information, and the information about the information, readable only on the plane of the wall beyond.

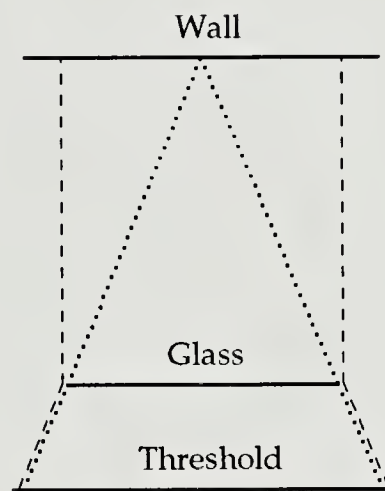
(3) an electronic (LED) display of text at handrail height along the threshold from which the HUD is viewed, moving from left to right, that is, as a vector moving away from the field of vision between the HUD and the wall. This head-down display provides a history of head-up display, its contemporary refinement in helmet-mounted displays and retina-tracking targeting devices, and its post-Cold War commercialization.

# AXONOMETRIC DIAGRAM OF "INTERFACE"

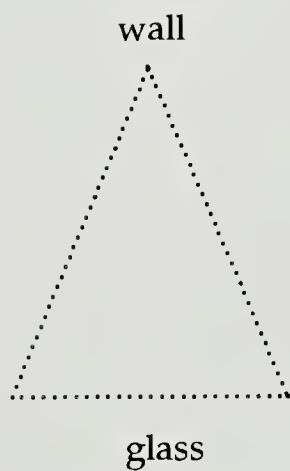


1. Point of Focus
2. HUD Screen
3. Electronic Handrail

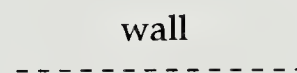
# CONCEPTUAL PLAN DIAGRAMS OF THE SPACE OF THE INSTALLATION



1. Two incompatible systems of reading space are superimposed onto one another, within the same space, exposing them to each other.



2. Reading of the space created by interface between viewer and head-down display



Glass plane "disappears", or, is thrown into the same focal plane as the wall

3. Reading of the space created by interface between viewer and head-up display

[Note: these diagrams describe only the space between the glass and the wall]

## Legend

----- Lines describing space created by interface between viewer and head-up display

..... Lines describing space created by interface between viewer and head-down display

———— Planes by/through which the 'space' is perceived



## You Are Here: New York

Laura Kurgan

I am requesting funding from NYSCA for a project called "You Are Here: New York." The project is part of a larger one investigating the status and role of maps in contemporary architecture and urbanism, comprised of both extensive research into and experimentation with new technologies of mapping, and a critique of its prevailing codes and conventions. Without dispensing with the form of the map altogether "You Are Here" seeks to put into question the classical aim of orientation which has always driven the mapping enterprise, so as to open up the possibility of that new experience of discovery which can only derive from a certain disorientation. Start-up funding for the project as a whole has been provided by the Graham Foundation, and this application is limited to funds necessary for completing the segment which relates to New York City.

The project is guided by this claim: the analogy between a building and a city, as unified systems or machines capable of being diagrammed or charted in their functioning, can no longer be sustained. It has become impossible to claim, as did for example the Regional Plan Association in its 1962 Urban Design Manhattan, that "the entire urban infrastructure, not just the public transportation system but the water and waste, the energy and communications systems, should be viewed and designed as one 'mega-building.'" This analogy (which has a distinguished heritage, not simply to be dismissed, including among others Le Corbusier and Sant'Elia) finally implies, whatever its conceptual power, the form of the the map: the regulated flow of people, things, and information through a unified system or a totality. But the city today is an irreducible experience of complication, of the interference between flows and a radical fragmentation of systems: no longer a plan and a map, but multiple, incomplete, and often incompatible maps overlaid across one another. If each map of the city tells a different story about it, and in a certain sense makes a different city available to us, we must expose these different stories -- different cities -- to one another. "You Are Here" attempts to draw the lines, movements, and relations which the conventions of mapping and an inherited concept of the city (and of the building) prevent us from seeing. If we cannot, and indeed must not, erase these complications, our task must be to make them readable.

I propose a thorough re-mapping of New York City, but one compiled entirely from existing maps. The work of re-mapping will be done against two backgrounds, two of the most powerful and different overviews of the city: a satellite photograph of the region digitized and scaled such that the pixelated image can be read as a map, and a 3-D model based on the computerized version of New York's Sandborn map. A multiplicity of what claim to be more specific maps can then be overlaid onto these from a variety of sources: telephone (including fax machine and beeper) networks, the subway system and its patterns of use, electronic banking networks and currency flows, property ownership and zoning, homelessness, income distribution, ethnicity and national origin, language use, and violence, to name a few. This process of reading the city will rely on the way maps are structured by the computer, as data, i.e., with layers, floating scales, zooms and annotations, to produce a new and synthetic architecture of information. The analytic work involves reproducing and reprocessing the maps in the computer so as to collate them at interchangeable scales, allowing comparison and overlay. The task of analysis implies a constant effort to supplement existing maps with each other, in order to produce a kind of friction between barely-compatible conventions that makes their assumptions, and not simply the maps themselves, legible.

The structure of the project therefore, does not tolerate the single point of view associated with either maps or master plans. The two background maps are constantly shifting and being redefined by the forces (and maps) acting upon them. The resulting product will be a trace of some of the forces at work in the contemporary city... so that we might expose them to one another, and have the chance to live in some without losing the others.



## You Are Here: Information Drift

Q. Where am I?

A. You are here. 40.5° 43' 17.27" N, 73.5° 59' 49.54" W

That a specification of this answer can now be provided, to an accuracy of within one centimeter, anywhere on the globe, has become a commonplace of many journalistic accounts of the Global Positioning System. "The GPS," reported The Wall Street Journal recently, "is the most accurate navigation and targeting system ever devised." Or as one manufacturer puts it, "everyone will have the ability to know exactly where they are, all the time."

You Are Here makes use of this satellite-based technology to investigate some of the structural complexities of the drive to orient or to position, and to navigate in turn the strange interface between the information space of the digital map and the space it claims to represent. The aim is to investigate the spatial characteristics of the map and its technology, which is to say the architectures of its information, and their effects on the spaces through which the map guides its users. The "here" of a map, and maps always presuppose some sort of orienting "you are here," is quite another thing from the "here" of the city or the desert, and drifting in the information zone of the map can yield a sharply different experience of space.

How do maps, as information, and the display systems that increasingly make them available, not simply represent but actively construct a space? When "you are here" on a map, through what sort of space do you move, and what sort of movement is possible there? These questions, however abstract, cannot be answered only formally or in principle -- they demand examples, maps and information zones themselves, and with them the particular experiences of orientation and dis-orientation possible in data space. "You Are Here" will try to pose some of these questions, to do at least two things at once: challenge the hegemony of the locative drive, and explore the odd transparency and disjunction between earth and data space.

The Global Positioning System depends on a constellation of 24 satellites launched by the Department of Defense, beginning in 1977, at a cost of about \$12 billion. Since it became fully operational this past July, the system enables precise instantaneous positioning in any weather, at any time, and in any location -- whether for soldiers in the desert, cruise missiles in flight, or ships at sea. The Navstar satellites, which circle the earth on six orbital paths once every twelve hours, at 20,200 kilometers above its surface, function as something like synthetic stars for any user equipped with a receiver. Tracked and guided by a ground network of five control and monitoring stations, the satellites constantly broadcast precise position and time signals. The receivers, some of which are small enough to hold in one hand, work like portable



antennas or satellite dishes. A GPS receiver which can "see" four of these satellites at once -- and the orbital paths are plotted such that, barring obstructions, four satellites are always in view anywhere on earth -- can measure the time the signals take to reach it (moving at about a foot per nanosecond) and, by comparing it with the information about the satellite's position, can calculate its own position: latitude, longitude, and elevation.

The position fix is not exact, though. Errors are introduced by the satellite clocks, imperfect orbits, ionospheric and atmospheric disturbances, and the wandering course taken by the signals, and in addition the military intentionally degrades the quality of the signals picked up by non-military receivers. Typically, accuracies of about 100 meters are possible for commercial users, and military receivers reading higher-grade signals can locate themselves to within 10 or 15 meters. Correcting these errors, often in real-time, is known as "differential GPS," and can dramatically improve the readings. When the raw GPS positions are in turn measured against GPS readings from a known location within sight of the same satellites, the systematic errors in the signals reaching both receivers can be identified, and the position specified with even greater accuracy. "Differential correction" can bring even ordinary commercial receivers to accuracies of within 2 to 5 meters, and civilian users with very sophisticated equipment can correct the measurements of their locations down to centimeters. With a radio link between the remote or "rover" location and the reference point, these readings can be made in real-time.

A GPS receiver located, for the duration of the installation, on the Storefront's roof transmits uncorrected real-time position readings to a computer in the gallery, providing a constantly updated feed of the receiver's positioning information. In addition, two different sets of GPS readings have been generated earlier on the roof of the Storefront for Art and Architecture, both recording a line drawn parallel to the storefront of the Storefront: a set of five static points recorded over the course of an hour on 25 January, and a line walked for a little more than a minute on 14 January. These position readings have been differentially corrected with data downloaded from the New Jersey Department of Environmental Protection community base station in Trenton, and the readings are accurate within a range of about 5 meters, or 15 feet. The corrected data have been manipulated and interpreted with mapping and analysis software, which translates the position readings into the visual forms and conventions of mapping or architectural drawing. Of course, the Storefront is a small site, and the superimposition of a plan of the building over the GPS map shows that much of the building disappears within its range of error. This positioning data provides the immaterial substance of the installation: real-time readouts on display screens, the genealogy of the corrected positions as wall maps, and the readings themselves inscribed on the physical surfaces of the building itself.



The GPS-generated map -- of the Storefront or the city, or anywhere, thought not so much as a network of sites as one of information -- charts a series of drifting pathways across a terrain. GPS location data, always a series of points, requires that both movement and stasis be registered as drift in the zone of information, and the map-user operates in an unusually layered, parallel or parallax, space, as if data and earth were at once independent of and somehow transparent to one another. The very elements of architecture -- points, lines, and surfaces -- all find themselves transformed and redefined in the interactions of this network. This scaleless information zone constitutes not simply the representation of a pre-existing space -- as if built or physical space had some ontological or ethical priority -- but another space altogether. The possibilities of disorientation, not in the street but precisely in the database that promises orientation, are of an entirely different order, and GPS offers the chance to begin mapping some of these other 'highways' as well: drift in the space of information.

The real-time GPS readouts, uncorrected raw positioning data from a receiver located on the roof of the Storefront, are displayed on a modified head-up display (HUD) screen, an imaging device used to project information onto a transparent surface in daylight. This satellite data is overlaid on a wall map of the Storefront's location. And conversely, another HUD unit overlays a plan of the Storefront and information about GPS onto a wall image of the GPS readout. In military aircraft, head-up or helmet-mounted displays allow pilots to read flight data, navigation information, or targeting data without turning their gaze away from the windscreen. Digitized data are superimposed on exterior views. Here, the GPS information is first displayed on a computer monitor and then relayed through mirrors and optically focused at infinity on clear glass screens, obliging the user to focus on the view beyond in order to read or see at the same time the information on the screen. The transparent screens dematerialize the depth of the monitor into the simple flatness of the data it displays, a text made only of light, and overlay that inscription, as another layer in a network of relays, onto the world of walls and people and objects. The displays create an interface between the data space of the map and the world it wants to chart. The HUD system offers, in the banal flatness of its screens, another strangely layered space, at once reflective and transparent, and thus refolds the spatial paradoxes of the GPS mapping system anew. Fixing a gaze on the world is at once the condition of possibility of reading the map on the screen and entirely at odds with drifting in that information zone.

GPS is being spoken of today as nothing less than a "revolution in measurement," in a discourse that raises the question of the difficulty of knowing one's location only in order to promise that it can finally be solved. The lure of exact location readings in real-time for everyone has itself been spun off from the more evident military applications -- target acquisition and weapons delivery, logistics, covert rendezvous, and in-flight missile or



aircraft guidance are just a few of the uses envisioned in NATO's 1991 manual on Navstar GPS User Equipment -- to a host of civilian uses: flying and landing commercial aircraft, in-car navigation, surveying and mapping, and police and fire emergency response. And the promise of "pinpoint accuracy" under any conditions has proven to be a powerful journalistic trope. The LA Times has reported on GPS geologists charting the movement of mountains after the Northridge earthquake, the New York Times suggests that GPS aircraft guidance is "expected to prevent the recurrence of an airliner's flying over hostile territory, as KAL 007 did ... when it was shot down by Soviet fighters," and The Wall Street Journal has warned of the threat of a "poor-man's cruise missile" that would use freely available GPS technology to direct cheap, accurate missiles" at targets on U.S. shores.

"Probably right from the time man got up on his hind legs and started to wander around the earth he's been looking for some simple way to figure out where he was and where he was going," begins a handbook on GPS from a leading equipment manufacturer. This "basic problem" -- call it disorientation -- has now been solved with GPS: that's the promise. "With today's integrated circuit technology, GPS receivers are fast becoming small enough and cheap enough to be carried by just about anyone. That means that everyone will have the ability to know exactly where they are, all the time. Finally, one of man's basic needs will be fulfilled. ... Knowing where you are is so basic to life, GPS could become the next utility."

Ubiquitous -- "as basic as the telephone" -- because capable of removing the obstacles that physical distances and differences introduce, GPS answers to powerful fantasies and desires, and offers new myths of total transparency. "Everyone will have the ability to know exactly where they are, all the time." "GPS really allows every square meter of the earth's surface to have a unique address," suggests one manual, while another promises that when real-time centimeter accuracy "is achieved, it will, in a sense, be like carpeting the entire globe with graph paper, because suddenly our instruments will be able to measure any point on earth to that accuracy."

One recent announcement for a GPS software package promised that it could finally deliver a reliable answer to the questions which continue to plague even the users of very powerful maps: "'Which pixel am I standing on?' or worse, 'Where am I?'" Not "where am I?" on the earth, but where on the map? At a time when these digital technologies seem to offer great leaps in our ability to locate ourselves -- GPS and computerized maps not only in airplanes but in passenger cars and homes: "you'll never get lost again" suggest the ads -- and when not only frightened urbanites but some of our most radical social critics are bemoaning our new-found failures in cognitive mapping (Jameson), a critical analysis of new mapping technologies seems imperative. But perhaps the sense of what's "worse" conveyed by the GPS announcement needs to be rethought: the older and perennial question of



"Where am I?" the question that gives rise both to panic and to new discoveries, has been replaced or displaced by a still stranger interrogative, "Which pixel am I standing on?" What could it mean to stand on a pixel? Who or what stands in or on the data space of a pixel? How can we begin to think the interface between that oldest of human occupations, standing upright, and the new omnipresence of pixelated data and imagery?